



New financing models as the next frontier of energy storage

Session:3.4 Presentation of Replicable Energy Storage Business Cases

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About Aggreko

9,920 MW

Power in our fleet

£1,720m

2017 revenue

208 locations

Sales and services centres

6,000 employees

Permanent & temporary

124 countries

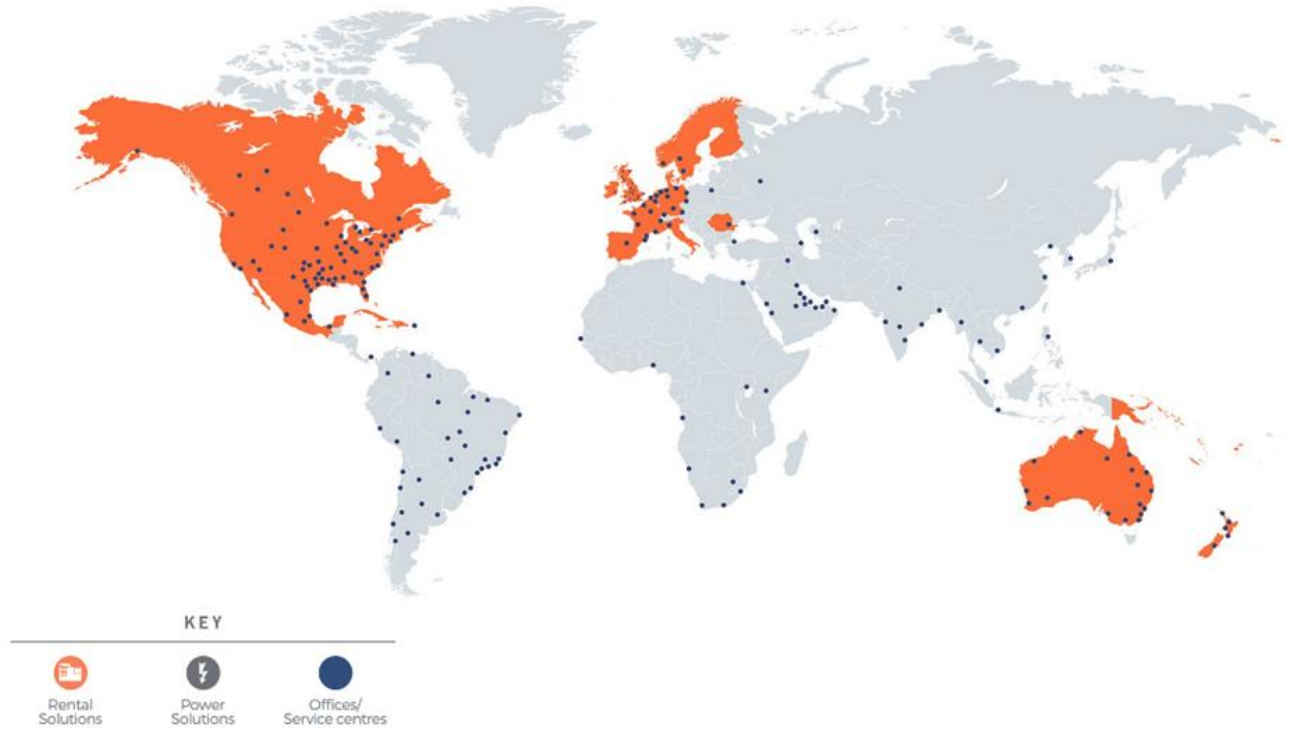
Where we operate

220 MW

Storage experience from 45 projects worldwide

2018 Birth of AMSS

Younicos rebranded as Aggreko and became an integral part of the company: Aggreko Microgrid and Storage Solutions was born



A global company, listed on the London Stock Exchange

Local expertise to help our customers make their difference



Differentiation on financing as the next step of the storage industry

The ongoing diversification of the storage industry

- Competition on price/services
- Sophistication of software and ability to stack revenues
- Specialization on customer segments
- Maturation of battery warranties and cell degradation management
- Novel approaches on financing as compared to traditional asset sale

→ Diversification aims at reducing risk to the customer

Bloomberg New Energy Finance | The Art of Financing the Behind-the-Meter C&I Energy Deal | August 15, 2018

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27%
Survey respondents who said lack of expertise as the top barrier to executing efficiency projects.

\$588 million
Cumulative investment into commercial PACE programs as of 2017

Jan 1, 2019
Adoption of IFRS 16 accounting rules, effectively treating operating leases as on balance sheet

Figure 1: Overview of risk exposure b

| Financier | Debt |
|-------------------|--------|
| Credit | Can |
| Debt | Credit |
| Lease | Credit |
| Shared benefit | Credit |
| Service agreement | Credit |

Source: Bloomberg NEF

UTILITY DIVE | Deep Dive | Opinion | Library | Events | Jobs

Generation | T&D | Solar | Storage | Demand Response | Distributed Energy | Regs

DEEP DIVE
New business models may be the next frontier in lower energy storage costs
Often overlooked in discussions about the declining price of energy storage are business models that aim to lower capital expenses.



Today's non-traditional financing models

Stem – C&I model

- Stem deploys and operates storage assets at C&I locations and charges leasing fee to customers
- Storage is used for demand charge reduction (focus CA and Ontario)
- Stem additionally markets assets to utilities for ancillary services and Ressource adequacy

→ **Example of leasing/service agreement**

Vattenfall – Batteriepartnerschaft

- Vattenfall deploys and operates storage asset at C&I location at no cost to host client
- Storage is used to lower grid fees of customers (peak shaving)
- Vattenfall further deploys asset in frequency regulation markets
- Grid fee savings are shared between Vattenfall and customers

→ **Example for shared benefit agreement**



How can new financing options reduce risks of storage projects to our customers?

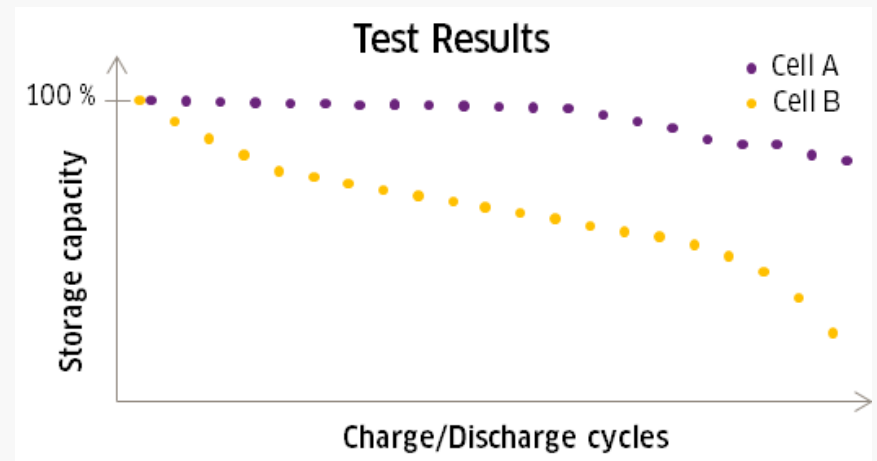


Technology Risk

- How much technical risk am I introducing into my business/operations?
- How will storage technology develop in future?

Batteries are complex animals and energy storage technology evolves fast

- **Service life and performance** of a battery are often highly dependent on the duty cycle, operating conditions, rate of charge/discharge, temperature, state of charge, etc.
- **New (battery) technologies** are in the works: they could be cheaper, longer lasting, etc. -> **significant investment risk**



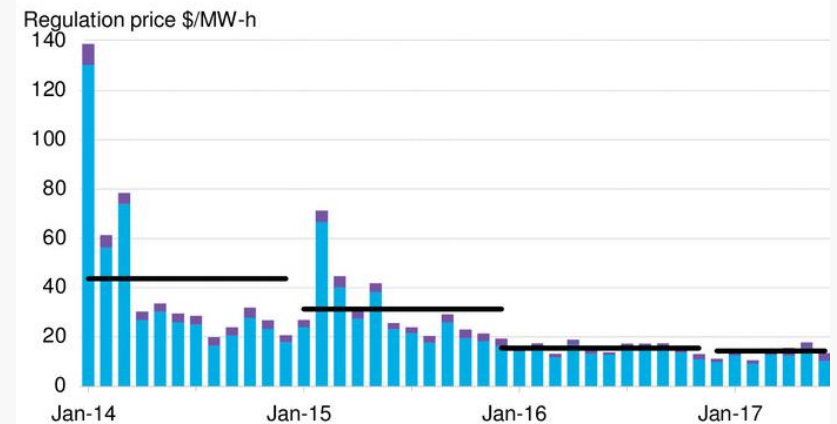
Revenue Risk

- What benefits will I get from installing a battery?
- How do I know for sure I will capture these benefits?
- How do I calculate residual value after x years?

Energy markets are subject to regulatory and market changes, which make revenue forecast for storage applications difficult:

- Volatile due to increasing renewable share and overcapacity
- Frequency response markets are subject to market saturation and price erosion
- Demand charges face risk of changes in utility rate schemes

PJM frequency regulation prices



The Irish DS3 storage opportunity - what are the project risks?

The good ...

- 6 year contract duration with secured revenue
- Service stack (FFR-TOR 2) offers attractive asset sizing for storage
- Storage tender offers attractive market entry to newly developing storage market



... and the risk

- How will the asset be cycled during original contract?
- What is residual asset value in 6 years?
- What is the optimal asset sizing with introduction of competitive procurement and unlocking of original service stack?
- How will Irish generation fleet look like in 6-10 years and which other technologies will in bid into the market in the future?



Aggreko storage as a service offering



6 Months


Minimum duration of contract

24/7

Availability of reliable power

€0

No upfront capital outlay

| PRODUCT VERSION | ENCLOSURE | POWER [KW] | DURATION [MIN] | TECHNOLOGY | |
|---|---------------|------------|----------------|------------|-------------|
|  | Y.Cube 30-min | 20-ft ISO | 1,000 | 30 | Lithium-Ion |
| | Y.Cube 60-min | 20-ft ISO | 1,000 | 60 | Lithium-Ion |



Aggreko storage as a service offering: Taking away risks from our customers

How it works

- We rent battery systems from existing fleet
- Two product versions available with additional rolled out in 2019
- Rapidly deployable 20' ISO containers including the Yunicos software platform
- Providing 20+ applications (ranging from microgrid management, grid services, behind-the-meter energy management, etc.)
- All rental assets are monitored 24/7 and come with full O&M package
- Rental contracts start from 6 month
- Can be extended to our full microgrid offer, adding solar and thermal generation



RISK-FREE



FLEXIBLE CONTRACT



MAXIMIZED VALUE



**BEST-IN-CLASS
TECHNOLOGY**



aggreko

Thanks for your attention!

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